

Real-Time Control System Optimizes Phosphorus Removal in the Dairy Industry

Problem

Typically, milk contains 1 gram of phosphorus (P) per liter. Production changes, cleanings, and product losses all contribute to dairy WWTPs struggling with high and fluctuating phosphorus concentrations. Plants typically overdose chemicals to stay within compliance; overdosing leads to excessive costs (chemicals, excess sludge), but does not guarantee regulatory compliance when load peaks occur.

Solution

Hach® RTC-P optimizes chemical dosing for phosphorous removal based on real-time phosphorus measurements and adjusts automatically for phosphorous load peaks. Hach onsite technicians and remote monitoring support assist operators, ensuring optimal RTC-P performance.

Benefits

Guaranteed real-time control of P-removal leads to more process stability, ensured compliance and less operator intervention. Optimized and easily adjustable chemical dosing (due to site conditions or environmental regulation changes) lead to 20% to 60% cost savings and reduced sludge.

What is RTC-P?

Since 1947, Hach has helped facilities in dairy applications meet the highest quality standards through water analysis and treatment. Hach's RTC-P is an off-the-shelf Real-Time Phosphorus Control solution designed with one goal: help operators and managers analyze and treat phosphorus as efficiently as possible.

Imagine if your facility had a team of operators focusing 365 days a year and 24-hours a day on measuring continuously a single parameter such as phosphorus. With frequent enough measurements, chemical dosing would always match true phosphorus levels, even at load peaks, making regulatory compliance an afterthought. That's the power of Hach's RTC-P solution: Peace of mind knowing your phosphorous levels are within set limits on a continuous basis, with the added benefits of reduced chemical dosage and less sludge production.

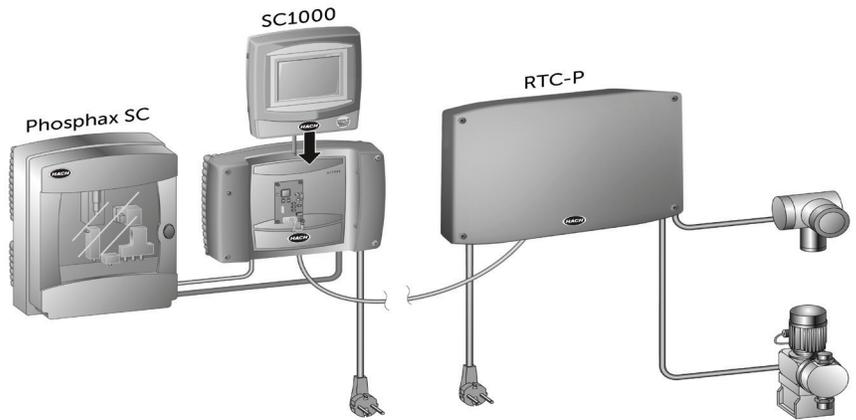


Figure 1: RTC-P solution

How Does RTC-P Work?

RTC-P accurately measures influent phosphorus levels in real time and adjusts chemical doses automatically to keep phosphorus levels under compliance. No grab samples, no manual tests, no manual dosing changes, and no guesswork lead to less operator intervention and full automation. Real-time analysis and control allow dairy WWTPs to ensure regulatory compliance while optimizing chemical dosing that lowers chemical treatment volumes. This creates significant savings on chemical, reduces physiochemical sludge, increases facility production, and most importantly ensures regulatory compliance.

Putting RTC-P to the Test

At a cheese processing facility, RTC-P allowed the operators and plant managers to confidently achieve compliance with the effluent limits under varying load conditions, while at the same time reducing chemical dosing costs.

This plant produces high amounts of phosphorus output which has to be removed in the WWTP to achieve the regulated total phosphorus limit of 1.0 mg/L. The facility determined to use a phosphate set point of 0.8 mg/L in the RTC-P to ensure compliance. Before implementing the RTC-P, chemical dosing was adjusted manually. The plant was continually at risk of breaching consent, with effluent phosphate values peaking to 4 mg/L during load peaks.

Thanks to real-time control by RTC-P installed in July 2015, the facility was able to keep phosphorus levels under compliance due to the increased process stability (see Figure 2).

Figure 3 illustrates the facility's economic benefits. Ferric dosing was reduced by an average of 33% while maintaining compliant effluent levels. This resulted in savings of \$1,850 per month for the facility.

A Complete Solution

RTC-P customers receive onsite and remote monitoring support from Hach specialists, keeping operations running smoothly.

The Hach customer referenced above paired RTC-P with Hach's Prognosys™ predictive diagnostic system to ensure compliance by preventing unexpected instrumentation emergencies. Pairing RTC-P with Prognosys allows facilities to manage phosphorus removal regardless of flow fluctuations, load peaks, or instrumentation issues.

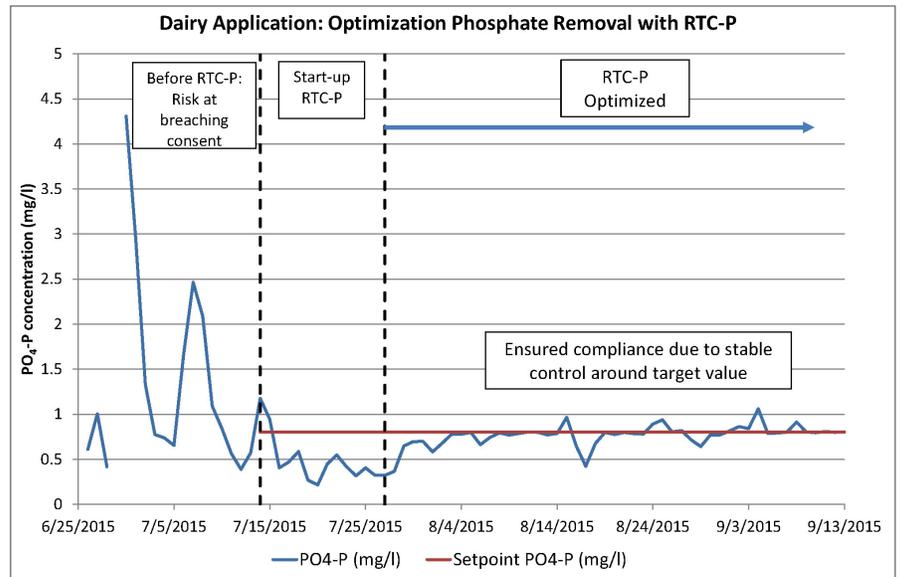


Figure 2: RTC-P optimizing phosphate removal

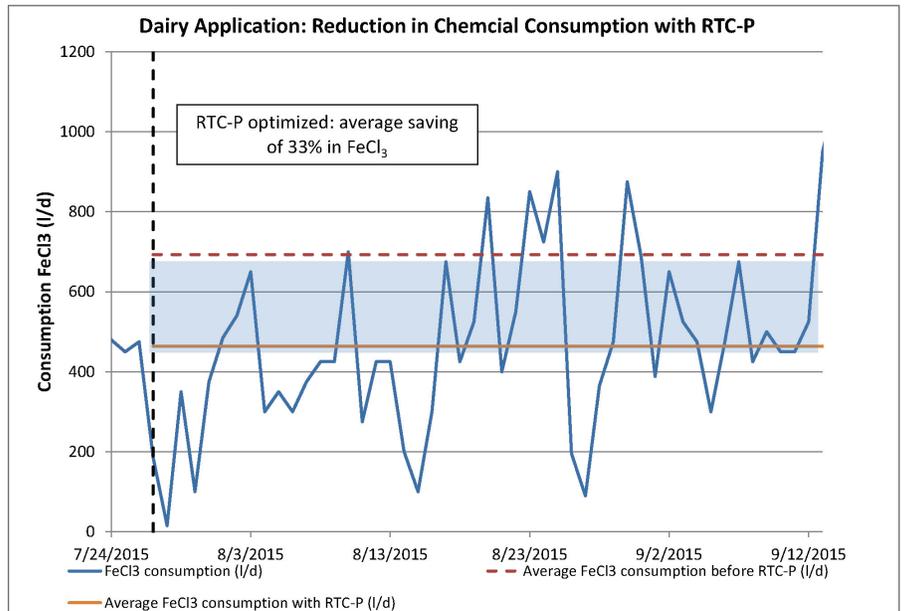


Figure 3: Chemical consumption with RTC-P

RTC-P Solution Summary

Compliance

- Stay below P-effluent limits
- Easily adjustable parameters for regulatory or site changes

Optimization

- Increased process stability
- Reduced manual intervention
- Reduced chemical dosing
- Reduced sludge production

Value

- Chemical savings of 20-60%
- Off-the-shelf: Easily implemented and configured

Contact Hach

To learn more about how Hach RTC-P or Prognosys can help your dairy facility, contact Hach at 1-800-227-4224. Or, visit the website at hach.com.